Editorials

A Nation's Health in Jeopardy

A NATION'S HEALTH has many facets, some of which at first may not seem to be related to health, in the common use of the word. But the meaning of health has come to be far more than simply the absence of illness. In fact, people often say they are healthy even when they know they have some disease or impairment. In a larger sense health is coming to mean more a state of being well or being in satisfactory adjustment to the stresses of one's internal and external environment. In like fashion, a nation's health may be thought of in terms of its adjustment to its own internal and external stresses, and it goes without saying that a healthy nation must have its foundation in a healthy citizenry. The health of its citizens affects the health and strength of a nation, and the converse is also true.

If one thinks of the health of a nation in terms of its physical, social, economic, and political health, one can begin to sense some strengths and some weaknesses. Physical health would include the health of the population and the health of the physical environment in which its citizens must live. Social health might include such things as literacy, education, social adjustment, and healthy life-styles and behaviors. Economic health can be thought of in terms of adequate productivity and provident use of economic resources, especially when some of the resources are in short supply. Political health might mean a stable government that promotes health in its broadest sense, attends to the freedom, safety, and well being of its citizens, and is responsive to their individual and collective needs and aspirations.

For some time this nation has led the world in achieving success in many of these measures of national health. More recently, there is reason to think that many stresses in both the internal and external national environment have been increasing faster than has our adjustment to them. To the extent that this imbalance has occurred our national health is in jeopardy. Some of the data are disturbing. Infant mortality rates have begun to rise for the first time in years. The elderly receive excellent health care on the whole, while many disadvantaged youth do not. There are millions in and out of the work force who do not have any health insurance at all and, therefore, less access to health care. There are unsolved problems of pollution of land, water, and air. The education of our youth is falling behind that in other nations with whom we must compete in a shrinking world with limited resources. There are the homeless in seemingly increasing numbers, and there are pervasive life-styles that result in widespread personal ill health. Our economy is under severe stress both internally to meet domestic needs and externally to meet unprecedented economic competition. Our political system has worked better than most, but its actions have done little to allow us to face up to a future that is already upon us. Political vision, resolve, and action seem too often limited by what needs to be done to win the next election.

Health, whether of a person, a population, an environment, a society, an economy, or even a body politic, is a long-term affair. We do not seem to be prepared to deal with this either in the public sector of government, where the time frame points toward winning the next election, or in the private sector, where the focus is on the bottom line or the reality of the next stockholders' meeting. If such as this is the case, it seems evident enough that the health of the nation, using the criteria we have given, is in jeopardy. Realistically, it is too much to expect that the needed leadership will come from either government or the private sector of business and industry. It must come from somewhere else—a potent third force must be created.

Perhaps there is something of a model for this third force. The environmental movement might be an example. It has developed and grown outside both government and business and industry, yet it has had a considerable effect on both. Its interests have been largely devoted to preserving the natural environment wherever it has been threatened. But more recently the environmental movement has become more concerned with pollution of the air, water, and land. This brings its activities within the broad dimensions of health. Could this movement be some kind of a model for a needed third force to stimulate and coordinate the continuing effort that will be needed if ours is to be the healthy nation that it can and should be? Issues of health, if we accept their broader dimensions, pervade every aspect of national life. They affect the health of every citizen and the health of the nation itself. It would need a collaborative effort of many interests that share the common goal to make this a healthy nation in the fullest sense of the word. Can something like this happen? Will it happen? It really must happen, if there is to be a better future for our nation and our children.

MSMW

Cocaine and Pregnancy—Implications for the Child

IN THE PAST FEW YEARS, problems associated with drug use in pregnancy have become endemic. As cocaine has become the drug of choice for millions of Americans, including pregnant women, as AIDS has become more commonly recognized in women and infants, and as legal cases have begun to raise the question of fetal abuse, physicians, nurses, social service agencies, and public health officials have all been faced with an increasing number of infants showing the detrimental effects of their mothers' drug use.

Although problems of substance abuse in pregnancy have received increasing attention in the medical literature since the early 1970s, there has recently been a rapid increase in the number of articles published related to this field. The reasons for this new interest are easily understood when current statistics from the National Institute on Drug Abuse are reviewed.[1] Although patterns of abuse of alcohol, marijuana, heroin, and other substances by women of childbearing age have changed very little over the past ten years, the incidence of cocaine use in this special population has been rising rapidly, a reflection of cocaine's increasing popularity among the general population of the United States.

Additionally, our concept of teratology has changed in that we now recognize that, although most drugs of use and abuse do not produce congenital malformations, there are definite behavioral and neurologic effects that place the neonate, infant, and child at risk for developmental abnormality.

Early studies evaluating drug use by women during pregnancy revealed that around 50% to 60% of women used some analgesics during pregnancy and sedative drug use by preg-

nant women ranged around 25%.[2] Most women involved in studies such as these were receiving prenatal care and obtaining many of the medications by prescription from their physicians. The use of illicit drugs was rarely considered. During a six-month period in 1982, screening of all women enrolling at Prentice Women's Hospital and Maternity Center/Northwestern Memorial Hospital in Chicago for routine prenatal care showed that 3% of these women had sedative-hypnotics in their urine at the time of admission to the general maternity clinic.[3] This study was performed before cocaine became society's drug of choice. The incidence of cocaine use in pregnancy ranges from 5% of all deliveries at Northwestern Memorial Hospital to 17% of all pregnant women receiving prenatal care in a Boston City Hospital study (B. Zuckerman, MD, Associate Professor of Pediatrics, oral communication, April 1988). These figures are only an early indication of the widespread nature of the problem.

Unfortunately, the risk maternal drug use poses for the child does not end at birth. In New York City, it was estimated that 50% of all child abuse and neglect cases involved drug abuse, and if alcohol was included, substance abuse was involved in 64% of child abuse cases (M. Marriott, "Child Abuse Cases Swamping New York City's Family Court," *New York Times,* November 15, 1987, p 17). In a survey conducted by the Child Abuse Prevention Program, Department of Health Services in Los Angeles, of 5,973 cases of child abuse reported in 1985, a total of 538 cases (9%) involved neonatal withdrawal due to maternal drug use in pregnancy. In the first six months of 1986, 403 of 4,299 cases (9.4%) of child abuse were reported due to maternal addiction during pregnancy. The patterns of drug use in this population showed a shift toward a higher frequency of cocaine use among the reported cases in the first six months of 1986 as compared to 1985.

In Illinois in fiscal year 1987, more than 91,000 infants and children were reported to the state child abuse hotline, a 50% increase over fiscal year 1986. Of those reports, 530 were due to the finding of a drug of abuse in a neonate's urine. This represented a 77% increase in such reports over a year's span. Even so, the majority of cases of maternal substance abuse in pregnancy go undetected and unreported.

A study conducted in 1986 by the Illinois Department of Children and Family Services (DCFS) evaluated a random sample of 385 children who had become wards of the state due to abuse or neglect and who subsequently had been placed in foster care. It was found that about half of these children came from parents or caretakers who were known or suspected substance abusers. These parents were often reluctant to accept help: 55% rejected social services when offered, and 68% rejected substance abuse services. In addition, and perhaps most striking, 11% of these children in foster care had had serious medical problems (abstinence, seizures, respiratory distress) at birth related to in utero exposure to substances of abuse.

With the current shift to cocaine as one of the most common primary drugs of abuse, polydrug abuse has also become more common, with the majority of cocaine users abusing marijuana, alcohol, or cigarettes in addition. Thus, an evaluation of risk factors for a pregnant substance abuser and her newborn must take into consideration the effects of these secondary drugs of abuse. Another mediating factor in a fetus's response to drug exposure is the ability to metabolize and tolerate the illicit drug. This ability is determined through a variety of genetic and physiologic factors.

Many other factors in the environment of a pregnant substance-abusing woman, including poor nutrition, lack of prenatal care, maternal psychopathology, and the drug-seeking life-style, affect the ultimate outcome of a passively exposed infant and must be considered in interpreting clinical and research information.

Little reliable information regarding the long-term outcome of infants with passive exposure to drugs of abuse is available. To best evaluate these children at school age, environmental factors must be taken into account. These environmental factors are not only socioeconomic but should encompass aspects of the maternal-infant relationship, including maternal psychopathology and personality. One study that attempted to control for the caretaking environment of substance-exposed children compared these infants with those whose families began to use drugs after the birth of the children.[4] No differences were found between the in utero-exposed children and the children exposed to the social environment of drug-using caretakers. Further studies are needed before final conclusions can be drawn as to the long-term effects of in utero drug exposure on infant and child development.

The problems involved in evaluating the effects of maternal exposure to substances of abuse on the developing fetus and infant are multiple, not the least of which are the difficulties involved in following these infants over a long period of time. The chaotic and transient nature of the drug-seeking environment impairs the intensive follow-up and early intervention processes necessary to ensure maximum development by each infant. In addition, most women from substance-abusing backgrounds lack a proper model for parenting. These factors, compounded by the early neurobehavioral deficits of drug-exposed newborns, earmark these infants to be at high risk for continuing developmental and later school problems.

A key problem in the field of substance abuse in pregnancy is a public and professional lack of knowledge of the subject. Few prospective parents recognize that their life-style, especially drug use and abuse, has a powerful effect on the outcome of their newborn infant. Information about the hazards of substance abuse during pregnancy must be presented to the public in a straightforward, nonjudgmental manner. In this way, information regarding the effects of any licit or illicit drug use during pregnancy can become part of the public consciousness.

It is easy to overlook a newborn's passive exposure to drugs of abuse, for the assessment of maternal chemical dependence tends to be insufficient in most instances. Currently, pediatricians often must rely on scanty information from the prenatal period when assessing a newborn displaying withdrawal or the neurotoxic effects of drug exposure. A study of alcoholism by Sokol and colleagues found that "clinicians are continuing to miss the diagnosis in at least three of every four alcohol-abusing patients. It is unlikely that there is any other obstetric diagnosis that is missed as often."[5] Few patients today limit their abuse to alcohol and, with the current phenomenon of polydrug abuse, chemical dependence in pregnant women with the concomitant effects in newborns most assuredly is one of the most frequently missed diagnoses in the perinatal period. When an untoward event in the perinatal period does occur, whether it be a

perinatal cerebral infarction, unexpected premature delivery or an unexplained accident of pregnancy such as an abruption, maternal substance abuse must be placed in the differential diagnosis. An irritable newborn or one with unusual complications should be assessed with a full historical evaluation for substance exposure and, when indicated, a full toxicologic urine screen. Pediatricians have come to realize that intrauterine drug exposure has become a major cause of perinatal morbidity and mortality and an area that can no longer be overlooked.[6]

The developmental risks imposed by the maternal use of substances of abuse are, perhaps more than many other risk factors, preventable. The first step in prevention and intervention, however, relies on the establishment in the medical and public sectors of a perception of risk. This perception should be based on education of the public as to the clear effects maternal substance abuse has on pregnancy and neonatal outcome. Second, the medical and psychological communities must begin to better understand risk-taking behavior and the personality and motivational factors that engender and enhance this behavior. We must delineate the measurable outcomes that best express the damage of maternal substance abuse to the child, then use the most effective means of increasing the public's recognition of this risk and influencing the individual's will to act to reduce relevant risk-taking behavior.

IRA J. CHASNOFF, MD
Associate Professor of Pediatrics and Psychiatry
Northwestern University Medical School
Director, Perinatal Center for Chemical Dependence
Northwestern Memorial Hospital
Chicago

REFERENCES

1. Clayton RR: Cocaine use in the United States: In a blizzard or just being snowed?, *In* Kozel NJ, Adams EH (Eds): Cocaine Use in Pregnancy—Epidemiology and Clinical Perspective. Natl Inst Drug Abuse Res Monogr Ser 1986; 65:8-34
2. Kaul AF, Harsfield JC, Osathanondh R, et al: A retrospective analysis of analgesics and sedative-hypnotics in hospitalized obstetrical and gynecological patients. Drug Intell Clin Pharmacol 1978; 12:95-99
3. Chasnoff IJ, Schnoll SH, Burns WJ, et al: Maternal substance abuse during pregnancy—Effects on infant development. Neurobehav Toxicol Teratol 1984; 6:277-280
4. Wilson GW, McCreary K, Kean J, et al: The development of preschool children of heroin-addicted mothers—A controlled study. Pediatrics 1979; 63:135-141
5. Sokol RJ, Miller SI, Martier S: Preventing Fetal Alcohol Effects—A Practical Guide for the OB/Gyn Physicians and Nurses. Rockville, Md, National Institute on Alcohol Abuse and Alcoholism, 1981
6. Chasnoff IJ, Burns KA, Burns WJ: Cocaine use in pregnancy—Perinatal morbidity and mortality. Neurobehav Toxicol Teratol 1987; 9:291-293

Myocarditis and Dilated Cardiomyopathy

ACUTE MYOCARDITIS is a clinical diagnosis that can be made with confidence when a previously healthy child or young adult has a new onset of abnormal cardiac function—as reflected in left or right (or both) ventricular failure, serious ventricular arrhythmia, or conduction disturbance—in the setting of an acute febrile illness specifically associated with a known microorganism such as measles, infectious mononucleosis, mycoplasma infection, trypanosomiasis[1] and in the absence of cardiodepressant drugs, toxins, or other systemic disease. As a rule, because of the generally benign course—often even subclinical—such cases rarely come to the attention of an internist or cardiologist. The diagnosis of myocarditis is facilitated by the presence of tachycardia out of proportion to fever and systemic illness, by evidence of pericarditis, by myositis, and by epidemiologic evidence of exposure to cardiotropic microorganisms. Notwithstanding the availability of rather safe methods of obtaining myocardial tissue for histopathologic study, relatively few patients have undergone myocardial biopsy in this acute setting. In young age groups, the exclusion of other forms of heart disease by other than general clinical means is hardly necessary, whereas in older persons the possibility of silent coronary artery disease or preexistent chronic subclinical cardiomyopathy must always be considered.

While the majority of such patients survive and go on to full clinical recovery, a significant number of patients observed carefully have shown clinical evidence of a chronic cardiomyopathy.[2,3] In one subset, ongoing myocardial inflammatory lesions found by myocardial biopsy on autopsy justify the diagnosis of subacute or chronic myocarditis,[4] whereas another subset of patients manifests dilated cardiomyopathy without histologic evidence of active myocarditis.[5]

This wide spectrum of the natural course of acute infection involving the myocardium mandates close follow-up of all patients with acute myocarditis for late stable or progressive myocardial dysfunction, which may for a long time remain subclinical. When present, however, this disorder should dictate appropriate therapy and especially secondary prevention by control of preload and afterload—including restriction of activity in some cases—and by protection of the person from cardiotoxins such as ethanol.

It is, however, another group of patients who come to the attention of internists and cardiologists with considerably greater frequency, namely, patients who have experienced a relatively recent onset of congestive heart failure without a history of acute myocarditis and who, in the absence of evidence of congenital, valvular, coronary artery, or specific heart muscle disease, are diagnosed as having dilated cardiomyopathy. An endomyocardial biopsy is frequently carried out in this patient group and, depending on the population sampled, the number of specimens taken, and the pathologic criteria used, a significant percentage are diagnosed as having active myocarditis. It is this type of patient that is discussed elsewhere in this issue. O'Connell and Mason present a comprehensive review of both clinical and experimental evidence for the infectious-immune cause of chronic, dilated cardiomyopathy. According to this concept, whereas the initial myocardial disease is directly related to the infectious agent, usually a virus, the ensuing progressive myocardial damage and fibrosis, with or without persistent inflammation, is attributable to immune or autoimmune processes. One may wonder why, in view of the multifaceted evidence presented, the infectious-immune cause of some cases of dilated cardiomyopathy continues to be labeled as a hypothesis for which evidence remains circumstantial.

In individual inbred strains of mice, the myocardial response to acute experimental infection with a specific strain of a specific virus tends to be remarkably uniform, but there is a wide variation of expression of the response in different strains.[6,7] Thus, it is entirely unreasonable to expect a uniform response to acute viral infections in humans, an outbred species, exposed to many different viruses and even strains of viruses. We are not surprised, then, at the wide spectrum of clinical expression seen in acute outbreaks of viral disease. A similar wide spectrum of myocardial involvement has recently been observed in an outbred animal—the pig—exposed to a myotropic strain of encephalomyocarditis virus.[8] In this connection, the reports of familial myocarditis quoted by O'Connell and Mason are also relevant.

With regard to the diagnosis of myocarditis, we may be disadvantaged by the definition of myocarditis as an inflam-